

**FIRST YEAR M.A.S.L.P. : WINTER- 2018**  
**SUBJECT : STATISTICS & RESEARCH METHODS**

Day : Monday  
Date : 08/10/2018

Time 10.00 AM TO 01.00 PM  
Max. Marks : 80

**W-2018-3703**

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Answers written in the inappropriate answer sheets will not be assessed in any case.

**SECTION – A**

**Q.1** Attempt any **TWO** of the following: **(30)**

- a) i) What do you mean by partial correlation? Describe its characteristics and application.  
An investigator, during one of his studies, collected some data and arrived at the following conclusions:
- 1) The correlation between height and weight = 0.8.
  - 2) The correlation between weight and age = 0.5.
  - 3) The correlation between height and age = 0.6 compute the net correlation between height and weight by partialling out the third variable viz age.
- ii) Given the following data:
- |                           |                           |
|---------------------------|---------------------------|
| Marks in History (X)      | Marks in English (Y)      |
| Mean <sub>x</sub> = 75.00 | Mean <sub>y</sub> = 70.00 |
| SD <sub>x</sub> = 6.00    | σ <sub>y</sub> = 8.00     |
- Determine the regression equation and predict.
- 1) The marks in English of student whose marks in History are 65 and
  - 2) The marks in History of a student whose marks in English are 50.
- b) i) What are non-parametric test? How are they different from parametric tests? Discuss their merits and limitations.
- ii) A researcher wanted to test the effect of drug in reducing anxiety. For this purpose he used two groups of individual experimental and control matched in paris.  
He made use of an anxiety scale for the assessment of anxiety among the subjects of the group. (The experimental group was given the drug while no such thing was given to the control group). The results were pooled as under.  
Experimental Group score : 115, 114, 114, 110, 108, 107, 105, 100, 97, 95,  
Control group scores: 120, 117, 112, 118, 102, 95, 107, 106, 93, 99
- iii) The mean weight of 150 students is 60 kg the mean weights of boys and girls are 70 kgs and 55 kgs respectively. Find the number of boys and the combined standard deviation.

P.T.O.

- c) i) What is chi-square test? Discuss its assumption, limitation and uses. The responses of these groups of students on an item of likert's attitude scale were recorded and are as follows.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Total
Medical College	12	18	4	8	12	54
Engineering College	48	22	40	8	10	98
Law College	10	4	12	10	12	48
Total	70	44	26	26	34	200

- ii) Given a normal distribution with mean 50 and SD of 15.  
 a) What percent of cases will lie between the scores of 47 and 60?  
 b) What percent of the cases will lie between the 40 and 47?

**Q.2** Attempt any **TWO** of the following: **(10)**

- a) The following scores were obtained by a group of 40 students on an achievement test.  
 32, 78, 27, 65, 88, 83, 63, 32  
 86, 70, 42, 66, 56, 44, 63, 59  
 73, 52, 43, 69, 39, 46, 71, 65  
 42, 55, 39, 70, 57, 49, 78, 70  
 34, 61, 62, 77, 81, 72, 79, 69  
 Prepare a frequency distribution table and extend it to a cumulative frequency distribution.
- b) Discuss properties of arithmetic mean.
- c) Point out the situations where the use of range, quartile deviation and standard deviation is best recommended.

### SECTION – B

**Q.3** Attempt any **TWO** of the following: **(30)**

- a) What do you mean by multivariate techniques? Explain their significance in context of research study.
- b) What characteristic it must possess in order to get a good research hypothesis? Give difference between one tail test and two tail test.
- c) Enumerate the different methods of collecting data. Which one is most suitable for conducting enquiry regarding family welfare programme in India? Explain its merits and demerits.

**Q.4** Attempt any **TWO** of the following: **(10)**

- a) Explain simple and complex factorial design.
- b) Explain different variables in the context of research.
- c) Report writing

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